

constraint according to the importance of arthritis and importance of the deformation of lower limbs. For all patients, arthritis stage and lower limbs were analyzed and they were asked to fulfill before and after 5 weeks appereled a specific and validated auto-questionnaire of life quality: KOOS (Knee Injury & Osteoarthritis Outcome Score).

Results.— Every patient had a significant improvement of symptoms, pain and function items. ($P=0.0031$). Improvement was with varus deformation importance and male sex. In women cases, the observance was significantly worse than for men.

Conclusions.— Results of our series show that the use of a custom discharging orthosis is pertinent in unicompartimental femoro-tibial gonarthritis treatment.

<http://dx.doi.org/10.1016/j.rehab.2014.03.131>

CO30-004-e

The effects of experimental knee joint effusion on quadriceps corticomotor excitability, intracortical excitability and the cortical silent period

D. Rice^{a,*}, P. McNair^b, G. Lewis^b, N. Dalbeth^c

^a Health and Rehabilitation Research Institute, AUT University and Waitemata Pain Services, Department of Anaesthesiology and Perioperative Medicine, North Shore Hospital, Auckland

^b Health and Rehabilitation Research Institute, AUT University, Auckland

^c School of Medicine, University of Auckland, Auckland

*Corresponding author.

Keywords: Quadriceps; Knee injury; Arthritis; Corticomotor; Effusion

Introduction.— Quadriceps arthrogenic muscle inhibition (AMI) is common after acute knee injury, knee surgery and chronic joint pathologies such as arthritis. Joint effusion is known to be a potent cause of AMI, enhancing spinal reflex inhibition of quadriceps motoneurons. It is currently unknown whether supraspinal pathways are also involved in AMI.

Methods.— Transcranial magnetic stimulation was used to measure quadriceps corticomotor excitability, intracortical excitability and cortical silent period duration before and after the induction of experimental joint effusion in 17 healthy volunteers. Experimental joint effusion was induced by injecting dextrose saline into the knee joint to a standardized intra-articular pressure of 50 mmHg.

Results.— Quadriceps corticomotor excitability increased significantly following experimental knee joint effusion ($P<0.05$), while the duration of the cortical silent period decreased ($P<0.05$). There was no change in short interval intracortical inhibition or intracortical facilitation ($P>0.05$).

Conclusions.— The results of this study provide no evidence for a supraspinal contribution to quadriceps AMI. Paradoxically, and in agreement with previous observations in patients with chronic knee joint pathology, quadriceps corticomotor excitability increased following joint effusion. These findings may be at least partially explained by a decrease in GABA mediated inhibition at a cortical level.

<http://dx.doi.org/10.1016/j.rehab.2014.03.132>

CO30-005-e

The analysis of an original unloading brace for knee osteoarthritis

K. Langlois^{*}, F. Lavaste^{*}, H. Pillet

Arts et métiers Paris tech, LBM Paris, Paris, France

*Corresponding author.

Keywords: Unloading brace modeling; Osteoarthritis

Aim.— Braces are one of a range of physical treatments recommended for the treatment of the painful symptoms of osteoarthritis in the medial compartment of the knee [1]. In contrast with sleep braces, unloading orthoses play a mechanical role in reducing the forces applied to the medial compartment during weight-bearing [2]. This study focuses on biomechanical analysis of an

osteoarthritis) isolated and fitted on subjects.

Material and method.— Using computer-aided design, kinematics of the brace is reproduced. The numerical simulation of mechanical effect of the brace is getting ahead experimental data obtained on patients with knee osteoarthritis with motion analysis and radiographic imaging used by EOS.

Results/Discussion.— This model reveals a significant distraction occurring during the movement of the knee from flexion to extension, providing a significant reduction in pain for the wearer. Also, lateral rotation of the knee highlights the result of this brace. However, this model doesn't take into account sliding and deformation between the brace and the lower limb.

References

[1] Beaudreuil, et al. Revue du rhumatisme 2009.

[2] Fantini Pagini, et al. J Orthop Res 2012.

<http://dx.doi.org/10.1016/j.rehab.2014.03.133>

CO30-006-e

First national osteoarthritis patients' survey in France: Patients insights first

F. Rannou^{a,*}, B. Francis^b, P. Richette^c, F. Beroud^d,

F. Blanchet^e, C.E. Bouvier^f, A. Chaussier-Delboy^g,

X. Chevalier^h, C. Cochet^g, C. Dreux^e, P.A. Josephⁱ,

P. Monod^j, B. Morand^k, C. Roques^l, A. Sautet^m,

F. Srourⁿ, J. Giraud^o, D.R. Bertholon^o, F. Nock^p,

S. Sandev^p, P. Matieus^q, H. Servy^q, F. Alliot-Launois^r,

M. Dumond^s, J.N. Dachicourt^s, L. Grange^t

^a Rehabilitation, Bone and Joints service, CHU Cochin, Paris, France

^b Rheumatology Service, CHU Saint-Antoine, Paris, France

^c Rheumatology Service, CHU Lariboisière, Paris, France

^d Upps Pain Institute, Rueil-Malmaison, France

^e Cespharm Education Committee, Pharmacists Order, Paris, France

^f Thermal exploitant national council, Paris, France

^g Pedicure and Podiatrist National Order, Paris, France

^h Rheumatology Service, CHU Henri-Mondor, Créteil, France

ⁱ Physical Medicine and Rehabilitation Service, CHU Groupe Hospitalier Pellegrin, Bordeaux, France

^j Rheumatologists National Union, Castelnau-d'Aud, France

^k Rheumatologists National Union, Roanne, France

^l Association French thermal research organization, Toulouse, France

^m French Orthopedic and Trauma Surgery Society, Paris, France

ⁿ Conseil Départemental de l'Ordre des Masseurs-Kinésithérapeutes, Paris, France

^o Patients groups empowerment, Empatient, Paris, France

^p Evaluation and Prevention Atelier, Saint-Sauvant, France

^q SANOIA, France

^r AFLARpro, Paris, France

^s AFLAR, Paris, France

^t AFLAR, Rheumatology Service, CHU de Grenoble, France

*Corresponding author.

Keywords: Osteoarthritis; Quality of life; Patient's survey on line

Objectives.— The National osteoarthritis Alliance was created to optimize osteoarthritis patient care. One of its first initiatives was the launch of a national patient survey to assess the impacts of osteoarthritis in daily life.

Methods and patients.— A self-administered questionnaire (113 questions) being put on line at www.stop-arthrose.org. The main objectives were to better understand the realities of osteoarthritis and develop support actions for affected people.

Results.— From November 2012 to May 2013, 4650 patients answered the questionnaire (with an average of 20.33 minutes to complete). More than 70% of the respondents were aged between 50 and 69 years old. More than one third of them suffered with the first signs of osteoarthritis before the age of 40. Amongst the osteoarthritis worsening factors, overweight and obesity were present for 52.5% of the respondents, having a professional activity that impacts joints (49.7%) or previous joint trauma (31.8%). Respondents describe a negative impact of osteoarthritis on many life aspects, notably mood (81.7%), leisure activities

(77.2%), professional activity (70.8%), walking (66.5%), self-image (63.5%) and family life (59.4%).

Discussion.— The results assist in better understanding patient experience, needs and profiles. This innovative survey is a first important step to better recognize osteoarthritis as experienced by patients.

<http://dx.doi.org/10.1016/j.rehab.2014.03.134>

Posters

P192-e

Effect of low-level laser therapy on joint short-term and long-term pain, synovitis, anabolic and catabolic factors in cartilage of rabbits' progressive osteoarthritis induced by ACLT

W. Pu, L. Chuan, Y. Xiaotian, H. Chengqi

Center of Rehabilitation Medicine, West China Hospital of Sichuan University, Chengdu, China

Keywords: Osteoarthritis; Catabolic factors; Anabolic factors; Synovitis; Low level laser therapy

To investigate the effect of low-level laser therapy on joint short-term and long-term pain, synovitis, anabolic and catabolic factors in cartilage of a progressive rabbit OA model induced by ACLT. 72 New Zealand White rabbits were randomly assigned into 2 groups (ACLT and LLLT group). All rabbits received ACLT surgery and were treated 2, 4, 8, 12 weeks after surgery, with 12 rabbits in each study period being tested. LLLT is a helium-neon (He-Ne) laser (810 nm) of 13 J/cm², 3 times a week. Pain was tested by weight-bearing asymmetry. Synovitis was assessed by histology. Cartilage was evaluated by gross morphology, histology and gene expression analysis of anabolic and catabolic factors. Results showed that at least 6 week intermittent irradiation of LLLT could relieve knee pain, control synovium inflammation, could decrease cartilage of medial femoral condyle damage and could decrease production of IL-1 β , iNOS and MMP-3 and could slow down loss of TIMP-1. 8 weeks LLLT treatment could slow down loss of collagen II and TGF- β . The study suggests that LLLT plays a protective role against cartilage degradation and synovitis in rabbits with progressive OA, which could be achieved through the regulation of catabolic factors and anabolic factors in cartilage.

<http://dx.doi.org/10.1016/j.rehab.2014.03.135>

P193-e

Effects of extracorporeal shock wave therapy on cartilage protection and subchondral bone remodeling in rabbits osteoarthritis induced by ACLT

W. Pu^{a,*}, Z. Yujing^b, W. Xiaofei^b, Y. Xiaotian^b, H. Chengqi^b, L. Chuan^b

^a Department of rehabilitation medicine, West China Hospital, Sichuan University, Chengdu, China

^b Center of Rehabilitation Medicine, West China Hospital of Sichuan University, China

Keywords: Osteoarthritis; Extracorporeal Shock Wave Therapy; Cartilage Protection; Subchondral Bone

To investigate the effects of ESWT on cartilage protection and subchondral bone remodeling in rabbits osteoarthritis. Twenty-four rabbits were divided into two groups: ACLT group and ESWT group. Rabbits in two groups received ACLT to establish the knee osteoarthritis model. Rabbits from ESWT group received ESWT (Energy 1.6 J, Frequency 5 Hz, 1200 shock, 3 times per week, total 6 times in 4 weeks). Histological observation of rabbit articular cartilage; the bone mineral density was measured. The bone histomorphometry analysis was done in subchondral bone of femoral and tibial. IL-1 β , TNF- α and NO was

detected by ELISA. RT-PCR was used to analyze MMP-1, MMP-3, MMP-13 and TIMP-1 in cartilage. Histological assessments of MFC in ESWT group were significantly lower than that in ACLT group. The BMD of distal femora and tibia was significantly lower than that in ESWT group. ESWT decreased the trabecular bone relative volume, trabecular bone thickness and increased bone separation. MMP-1 and MMP-3 in ESWT group was significantly lower and TIMP-1 in ESWT group was significantly higher than that in ACLT group. ESWT could protect cartilage damage and subchondral sclerosis by regulating MMP-1, MMP-3 and TIMP-1 in cartilage and modulating subchondral bone metabolism.

<http://dx.doi.org/10.1016/j.rehab.2014.03.136>

P194-e

Effects of whole body vibration on structural and functional remodeling of subchondral bone in osteoarthritis of rabbits at early stage

W. Pu^{a,*}, W. Xiaofei^b, L. Chuan^b, Y. Xiaotian^b, Z. Yujing^b, H. Chengqi^b

^a Department of rehabilitation medicine, West China Hospital, Sichuan University, Sichuan, Chengdu, People's Republic of China

^b Center of Rehabilitation Medicine, West China Hospital of Sichuan University, China

*Corresponding author.

Keywords: Osteoarthritis; Subchondral bone; Whole body vibration; Structural remodeling; Functional remodeling

Objective.— To investigate the effects of whole body vibration (WBV) on structural and functional remodeling of subchondral bone in early osteoarthritis (OA) rabbits induced by anterior cruciate ligament transection (ACLT).

Methods.— Twenty-four adult rabbits were randomly divided into two groups: ACLT group and WBVT + ACLT group. Rabbits in two groups received ACLT to establish the knee OA model. Rabbits from WBVT + ACLT group received WBVT (Intensity of frequency: 40 Hz, Amplitude of vibration: 2–4 mm, Treatment time: 40 min/d, Duration: 4w). After intervention, the left femur and tibia of two groups were placed in Micro-CT scanning system. Using three-dimensional reconstruction Micview V2.1.2 and ABA analysis software to analyze bone of the femoral condyle and tibial bone volume fraction (BVF), trabecular thickness (TbTh), trabecular spacing (TbSp), trabecular number (TbN), volumetric BMD, tissue BMD. Geomagic Studio 11.0 software was used to translate modulus (EM), the reaction force (RF) and average Von Miss Stress of femoral condyle and tibial plateau.

Results.— BVF, Tb.N, Tb.Th, EM, RF, VMF, vBMD and tBMD of distal femur and tibia were significantly higher than that in ESWT + ACLT group ($P < 0.05$). Tb.Sp of distal femur and tibia were significantly lower than that in ESWT + ACLT group ($P < 0.05$).

Conclusion.— WBVT could effectively improve the early stages of rabbit knee osteoarthritis subchondral bone microstructure and mechanical properties.

<http://dx.doi.org/10.1016/j.rehab.2014.03.137>

P195-e

Effect of extracorporeal shock wave therapy on knee osteoarthritis

S.R. Yoon^a, J.H. Kim^b

^a Department of Rehabilitation Medicine, Gwangju Veterans Hospital, Gwangju Metropolitan city, South Korea

^b Department of Rehabilitation Medicine, Gwangju Veterans Hospital, South Korea

Keywords: Knee osteoarthritis; Extracorporeal shock wave therapy; Functional outcome

Introduction.— Knee osteoarthritis (OA) is the most common type of arthritis and a major cause of morbidity and disability. Extracorporeal shock wave therapy (ESWT) has been found to improve motor dysfunction and reduce pain in OA in animals.